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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,420	06/30/2003	Guy C. Thrap	026471-0801	5709

24272 7590 12/27/2005

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EXAMINER
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LUK, LAWRENCE W

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/611,420

Applicant(s)

THRAP, GUY C.

Examiner

Lawrence W. Luk

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-6,8-10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-10 and 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 11 has been **Cancelled** by amendment on February 18, 2005.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6, 8, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muratov et al. (6,621,256) in view of Windes et al. (5,642,027).

#### **Claim 1**

As to claim 1, Muratov et al. disclose in figure 1b, an arrangement for charging a power module, comprising: an energy source (**battery**) connected to said power module (**23**), a positive terminal of said energy source (**battery**) connected to a positive terminal of said power module (**23**), and a negative terminal of said energy source (**battery**) connected to a negative terminal of said power module (**23**); (see column 1, lines 21-25, 58-60) and a control circuit (**12, PWM**) adapted to provide a higher current level to said power module (**23**) than output by said energy source for at least a portion of a charging period, said control circuit (**12, PWM**) being adapted to provide a current level through

said power module **(23)** greater than a current level from said energy source during at least a portion of a charging period.

**Muratov et al. does not teach a power module including one or more ultracapacitors and wherein said control circuit is adapted to maintain a constant power level at the power module as a voltage level across the power module increases.**

Windes et al. discloses in figure 3 and 1, a power module **(30)** including one or more ultracapacitors **(10a-10n)** **(see column 1, lines 53-56 and column 2, lines 40-43)** and wherein said control circuit is adapted to maintain a constant power level at the power module as a voltage level across the power module increases **(see column 3, lines 30-35)**.

Muratov et al. and Windes et al. are analogous art because they are from the same field of endeavor of an electric apparatus providing a power supply with an inductor connected in series with the capacitor.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include a power module including one or more ultracapacitors and the control circuit is adapted to maintain a constant power level at the power module as taught by Windes et al.

The suggestion/motivation for doing so would have been to faster recharging of a commercial voltage energy storage and release system by using energy storage supercapacitors.(see column 1, lines 43-45).

Therefore, it would have been obvious to combine Windes et al. with Muratov et al. for the benefit of providing a power module including one or more ultracapacitors and a control circuit adapted to maintain a constant power level at the power module as a voltage level across the power module increases to obtain the invention as specified in claim 1.

**Claim 3**

As to claim 3, Muratov et al. in view of Windes et al. are applied supra, and Muratov et al. further disclose in figure 1b, column 1, lines 41-48, wherein said control circuit includes pulse-width modulator (12) and an inductor (22) connected in series with said power module (23).

**Claim 4**

As to claim 4, Muratov et al. in view of Windes et al. are applied supra, and Muratov et al. further disclose in figure 1b, column 1, lines 41-48, wherein said pulse-width modulator (12) controls a charge level of said inductor (22).

**Claim 6**

As to claim 6, Muratov et al. in view of Windes et al. are applied supra, and Okamura et al. further disclose in figure 1b, column 9, lines 22-32, wherein said inductor is adapted to limit a current level through said power module to a predetermined peak level.

**Claim 8**

As to claim 8, Muratov et al. in view of Windes et al. are applied supra, and Muratov et al. further disclose in figure 1b, column 1, lines 41-48, a pulse-width

modulator (12); and an inductor (22) connected in series with said pulse-width modulator (12) and said power module (23); wherein said pulse-width modulator (12) is adapted to control a charge level of said inductor (22). and wherein a control circuit is adapted to provide a current level through said power module (23) greater than a current level from an energy source (battery) during at least a portion of a charging period.

**Claim 10**

As to claim 10, Muratov et al. in view of Okamura et al. are applied supra, and Okamura et al. further disclose in figure 1b, column 9, lines 22-32, wherein said inductor is adapted to limit a current level through said power module to a predetermined peak level.

**Claim 12**

As to claim 12, Muratov et al. disclose in figure 1b, column 1, lines 41-48 and 16-25, charging an inductor (22) connected in series between an energy source (battery) and said power module (23); and controlling a charge level of said inductor (22) to achieve a desired current level through said power module (23) said desired current level through said power module (23) being greater than a current level from said energy source (battery) during at least a portion of a charging period.

**Muratov et al. does not teach wherein a power level to said power module is kept constant during charging of said power module.**

Windes et al. discloses in column 1, lines 59-66 and column 3, lines 30-35, wherein a power level to said power module is kept constant during charging of said power module.

Muratov et al. and Windes et al. are analogous art because they are from the same field of endeavor of an electric apparatus providing a power supply with an inductor connected in series with the capacitor.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include a power level to said power module is kept constant during charging of said power module as taught by Windes et al.

The suggestion/motivation for doing so would have been to faster recharging of a commercial voltage energy storage and release system by using energy storage supercapacitors.(see column 1, lines 43-45).

Therefore, it would have been obvious to combine Windes et al. with Muratov et al. for the benefit of providing a power level to said power module is kept constant during charging of said power module to obtain the invention as specified in claim 12.

### **Claim 13**

As to claim 13, Muratov et al. in view of Windes et al. are applied supra, and Muratov et al. further disclose in figure 1b, column 1, lines 41-48, wherein said controlling includes modulating the current from said energy source (**battery**) to said inductor (**23**) through a pulse-width modulator (**12**).

4. Claims 5, 9, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muratov et al. (6,621,256) in view of Windes et al. (5,642,027) as applied to claims 1, 8 and 12 above, and further in view of Moon (5,519,307).

**Claim 5**

As to claim 5, Muratov et al. in view of Windes et al. disclose the elements as claimed **except Muratov et al. in view of Windes et al. fails to teach the limitation of “wherein said charge level corresponds to a current level which is in accordance with a desired power level at said power module and an instantaneous voltage level across said power module”.**

Moon discloses in **column 1, lines 22-32**, said charge level corresponds to a current level which is in accordance with a desired power level at said power module and an instantaneous voltage level across said power module.

Muratov et al., Windes et al. and Moon are analogous art because they are from the same field of endeavor of an electric apparatus providing a power supply with an inductor connected in series with the capacitor.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the charge level corresponds to a current level which is in accordance with a desired power level at said power module and an instantaneous voltage level across said power module as taught by Moon.

The suggestion/motivation for doing so would have been a level of output voltage of the capacitor is determined by turn-off time of transistor Q2 which is determined by



turn-on time of the switching signal of pulse width modulating integrated circuit PWM.  
(see column 1, lines 55-59).

Therefore, it would have been obvious to combine Moon with Muratov et al. and Windes et al. for the benefit of providing an instantaneous voltage level across the power module to obtain the invention as specified in claim 5.

**Claim 9**

As to claim 9, Muratov et al., Windes et al. in view of Moon are applied supra, and Moon further disclose in **column 1, lines 49-54**, wherein said charge level corresponds to a current level which is in accordance with a desired power level at said power module and an instantaneous voltage level across said power module.

**Claim 14**

As to claim 14, Muratov et al., Windes et al. in view of Moon are applied supra, and Moon further disclose in **column 1, lines 49-54**, wherein said desired current level corresponds to a desired power level at said power module.

5. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muratov et al. (6,621,256) in view of Windes et al. (5,642,027) as applied to claims 1, 8 above, and further in view of Okamura et al. (5,604,426).

**Claims 6 and 10**

As to claim 6, Muratov et al. in view of Windes et al. disclose the elements as claimed **except Muratov et al. in view of Windes et al. fails to teach the limitation of**

**“wherein said inductor is adapted to limit a current level through said power module to a predetermined peak level”.**

Okamura et al. discloses in figure 1b, wherein said inductor is adapted to limit a current level through said power module to a predetermined peak level. **(see column 9, lines 22-32).**

Muratov et al., Windes et al. and Okamura et al. are analogous art because they are from the same field of endeavor of an electric apparatus providing a power supply with an inductor connected in series with the capacitor.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to include said inductor is adapted to limit a current level through said power module to a predetermined peak level as taught by Okamura et al..

The suggestion/motivation for doing so would have been to provide a peak load type electric apparatus with a power supply which allows effective use of the output electric power produced at the time of regenerative braking, especially, such as an electric car. (see column 2, lines 18-21).

Therefore, it would have been obvious to combine Okamura et al. with Muratov et al. and Windes et al. for the benefit of providing an inductor is adapted to limit a current level through said power module to a predetermined peak level to obtain the invention as specified in claim 6.

**Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence W. Luk whose telephone number is 571-272-2080. The examiner can normally be reached on 7 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571)272-4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LWL  
December 20, 2005

*Lawrence Luk*  
*examiner*  
*12/21/05*